gravitation that we can explain further. It is the real definition of mass, and (3) is a useful additional postulate, or a useful experimental fact.

So far as ease of thinking is concerned, which is more or less irrelevant, force and acceleration are far more easily grasped than mass. That is to say, it appears so to the writer; but Frederic Soddy[3] says: "the conception of force and its pseudo physical reality undoubtedly delayed for centuries the recognition of the law of the conservation of energy. Only what is conserved has the right to be considered a physical existence. In other branches of science, the conception is a stumbling block and a delusion." Perrin takes a radically different view. There seems to be a certain mysticism in Soddy's contention, for what do we care whether a force goes on "existing" when we finish with it? We find velocities and temperatures convenient, yet they go out of "existence" without any special regret. The main fact is we can give numbers to these forces, temperatures, etc., and make equations that correspond (somewhat) to experiments.

Mass, on the other hand, means (1) inertia. (2) capacity to be attracted by a gravitational field (3) capacity to create a gravitational field, and some other things. It appears to depend on velocity, though it is not intended to consider non-Newtonian mechanics. It is about as puzzling a thing as there is in physics —for who knows what gravitation is?

PAUL J. FOX

1203 STOCK EXCHANGE,
PHILADELPHIA

NONSILVERABLE CONTAINERS FOR SILVERING MIRRORS

IN the ordinary process of silvering glass mirrors by chemical decomposition (*e. g.*, Brashear's method) the metal is deposited upon the glass container. In this manner a great deal of silver which might have added to the thickness of the mirror is lost. This is an important item when silvering mirrors 25 cm. or more in diameter.

[3] "Matter and Energy," New York, 1912, p. 108.

The object of this note is to call attention to the usefulness of ordinary, "granite ware," enamelled iron pans, which do not attract the silver and hence increase the supply of material available for deposition on the mirror. This was observed some years ago, but its importance was not very apparent. However, during the past year the writer has had frequent opportunities to verify this observation and to apply it in producing thick deposits of silver on glass.

WM. W. COBLENTZ

BUREAU OF STANDARDS,
September 9, 1918

QUOTATIONS

SCIENTIFIC WORK IN INDIA

THE Board of Scientific Advice for India has, like similar bodies elsewhere, felt the effect of war conditions. The board has been strengthened by the addition of a representative of the Indian Munitions Board, and power has been conferred upon the president to appoint subcommittees, membership of which need not be confinel to members of the board, for the purpose of dealing with particular investigations. The board has found it necessary to modify the treatment of programs of work submitted by individual scientific departments, and to resolve that the annual report for 1916–17 be confined to a brief statement of work actually done during the year, also that the bibliography of publications bearing on particular subjects be consolidated. But the establishment of a Zoological Survey recorded for the year under notice, has not affected the composition of the Board of Scientific Advice, representation of this subject having been provided for already. That its organization should have been so slightly affected affords striking evidence of the soundness of the original constitution of the board.

The report of the board for 1916–17 is an interesting document, and much of its contents, especially where the applications of science are concerned, may repay perusal outside India. In agriculture the low values of

available phosphate in certain Indian soils—at times only one fiftieth to one twentieth of the amount usually regarded as necessary for fertility—have been under investigation. So, too, have been the low values of available potash in certain other soils. In this connection efforts have been made not only to correlate potash-deficiency with disease in animals and plants, but also to utilize the ash of at least one proclaimed weed as a means of adding potash to the soil, and incidentally as a partial set-off against the cost of eradication. Botanical work has included, in addition to survey operations, much that is of immediate economic importance. One notable instance is afforded by the device of a method of selfing cotton, which is not only simple, but is also said to have proved successful. Much sound work has been done with indigo, jute, opium, rice, sugar and wheat on agricultural lines, and with grasses, as well as trees, on forestry lines.

On the physical side we find that researches in solar physics have included an investigation of the displacement of the lines given by the electric arc. This study has supplied interesting results, and led further to a determination of wave-lengths in the spectrum of the planet Venus with results that are of promise. In geology, besides survey operations, useful economic work has been done in connection with the output of wolfram. Three new meteorite falls—all chondrites—have been reported for 1916–17 from northern India. The most notable item of economic geodetic work for the year has been the taking of hourly readings of a tide-gauge at Basra, erected in connection with military requirements. The constants deduced from the reductions of these readings have been transmitted to the National Physical Laboratory at Teddington, to admit of the tracing of tidal curves for 1917–18. Important also has been the compilation of a list of the plumb-line deflection stations of India and Burma.

The work undertaken in connection with plant- and animal-pathology has been useful and varied. In this relationship an item which deserves attention is an account of practical tests of the use of hydrocyanic acid gas for the destruction of vermin. While less successful than might be desired in the case of houses, this method has proved satisfactory as regards railway carriages and ships.

Appended to the report is a memorandum on work done for India at the Imperial Institute. A striking item in this memorandum is the record of a sample of Assam-grown flax, valued in London under war conditions in December, 1916, at £150 per ton, which was found to compare favorably with the medium qualities formerly received from Belgium.

Perhaps the time is approaching when a body, similar in its functions to this Indian board, may be brought into being so as to ensure for the scientific departments of our various Crown Colonies that correlation of effort which, as this report testifies, already so happily attends the operations of the different scientific departments of the Indian government.—*Nature.*

SCIENTIFIC BOOKS

Plant Genetics. By JOHN M. COULTER and MERLE C. COULTER. The University of Chicago Press. 1918. Pp. 214.

As the authors state the book is neither a technical presentation of genetics nor a general text, but is the outgrowth of a course of lectures designed to give general students of botany a brief introduction to the subject of genetics. This has been attempted in some 200 small pages with numerous diagrams. It is written for younger students than the books on genetics which have so far appeared. Necessarily a minimum of illustrative material has been used and the complex features are omitted altogether or are only briefly alluded to.

An account of the earlier theories of heredity and a discussion of the inheritance of acquired characters opens the book followed by several chapters on Mendelism. The simplicity of the examples of the various types of Mendelism and the diagrams to illustrate them is a real achievement. Some misrepresentations of facts are to be noted here which are hardly